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REPORT ON A COLLECTION OF
AMPHIBIANS AND REPTILES
FROM AFGHANISTAN

By

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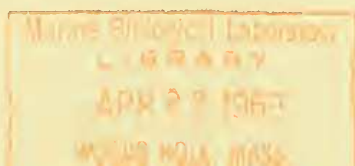
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INTRODUCTION

Afghanistan is a country which remains poorly known zoologically, and publications dealing with the herpetofauna are relatively few. The limitations of our knowledge of the herpetology of Afghanistan are emphasized by the fact that the present collection, the largest thus far reported from this landlocked country, is the result of the first trip to Afghanistan with herpetology as the primary objective.

In the summer of 1964, the senior authors (RJC, EDC) visited Afghanistan with the intention of making as extensive a herpetological collection as possible and recording as many ecological observations as circumstances would permit. They are responsible in this paper for the section on physiography and general itinerary and for all ecological observations cited in the text as well as color descriptions of living animals, though the junior authors revised and rearranged material to conform to the needs of the manuscript.

The bulk of the collection was sent to the California Academy of Sciences for study and permanent deposition. A selection of specimens was retained by the senior authors as noted in the text under "Additional material: RJC. . ." These specimens were not seen by the junior authors (SCA, AEL). The



junior authors are responsible for final identifications of all specimens, and for the comments on systematics.

The journey to and from Afghanistan took the Clarks through northern Iran, and reptiles collected along the way have been reported in an earlier paper (Clark, Clark, and Anderson, 1966).

ACKNOWLEDGMENTS

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The junior authors are indebted to the following for permission to examine specimens in their care: Miss Alice G. C. Grandison, British Museum (Natural History) [BM]; Dr. Ilya Darevsky, Zoological Institute, Leningrad [ZIAS]; Drs. Charles M. Bogert and Richard Zweifel, American Museum of Natural History [AMNH]; Dr. Robert Inger and Hymen Marx, Field Museum of Natural History [FMNH].

PHYSIOGRAPHY AND GENERAL ITINERARY

A portion of the collection was made during July and August 1964, partly close to the main road from the Iran border to Kabul, via Herat, Shindand, Farah, Delaram, Girishk, Kandahar, Qalat, and Ghazni. The remainder was accumulated on trips made from Kabul: 30 miles north towards the Hindu Kush in the region around Charikar, 15 miles west to Paghman, 90 miles east along the new road via Sarobi to Jalalabad and southeast towards the Pakistan frontier covering the area between Gardez and Khost. The localities mentioned in the text are shown in figure 1.

The route from the Iran border to Kabul covers about 700 miles, passing chiefly through vast, semidesert, alluvial plains, sometimes undulating and then heavily eroded, or broken by isolated mountain peaks and frequent dried-out river beds. No doubt these regions are flooded during the rainy season. Vegetation was sparse and consisted mainly of low thorny bushes, a few of which were in flower by late August although there had been no rain. The mountains were almost exclusively rocky and stony and devoid of vegetation. In the distance, south of Girishk and Kandahar, were seen the red sand dunes of the great desert, and this was just penetrated southeast of Kandahar, a few miles from the road to the Pakistan frontier. The line of sand hills was a conspicuous feature from

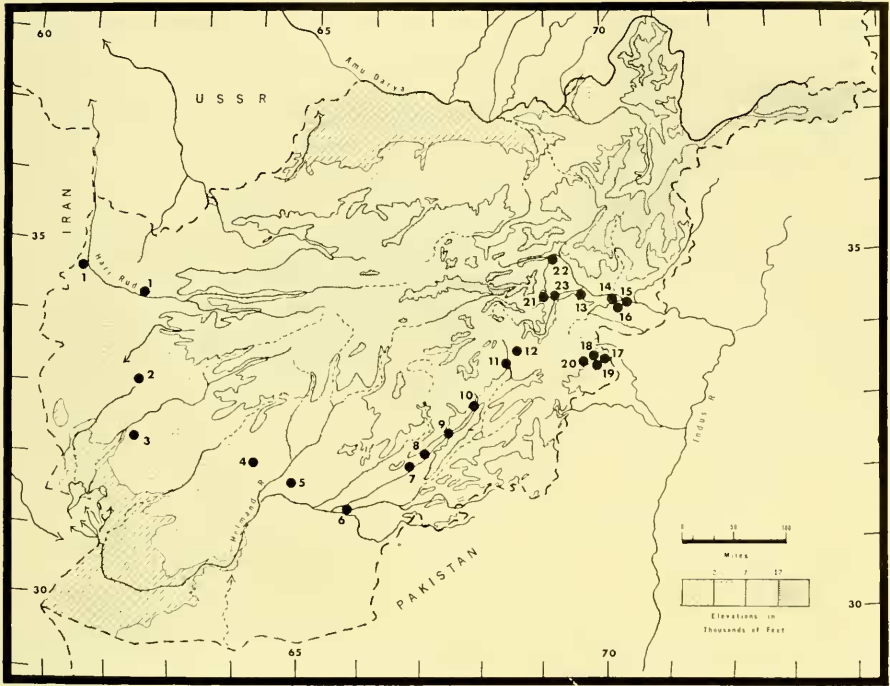


FIGURE 1. Map of Afghanistan showing collecting stations.

many miles away and at the point visited terminated abruptly in a 30-foot drop into a strip of lush vegetation, a quarter of a mile wide, where cattle were grazing. The near side of this strip was typical, flat, hard-baked earth, with some deeply eroded gullies. The sand was a deep yellow in color, and the sand hills rolled away as far as the eye could see. Occasional spiny bushes formed the only vegetation on the desert sand.

Other local dune areas occurred close to the road, particularly between Girishk and Kandahar, but were not extensive. Sandy patches occurred in river beds, small gullies, or even on otherwise open baked earth. Villages were relatively infrequent, but wherever they occurred there were irrigation channels which sometimes extended several miles either side of the village. Trees were often associated with these ditches. In many areas there was evidence of previous irrigation, and it could be seen that a poor cereal crop had been recently harvested, leaving only the sparse, prickly bushes. This was a common habitat of *Eremias guttulata watsonana*.

Rivers encountered included the Hari Rud at Herat; the Farah Rud at Farah; the Khash Rud at Delaram; the Helmand at Girishk; the Tarnak at Kandahar; and the Kabul between Kabul and Jalalabad. All of these contained

a considerable body of slowly flowing water. West of Kandahar and north of Girishk there was extensive lush cultivation.

Apart from the border area around Islam Qala, little of the country lies below 3000 feet. Station 1 (fig. 1) occurs between Islam Qala and Herat. South of Herat the altitude increases to 6000 feet, drops to 4100 feet at Shindand (station 2), and still further towards Farah to 2400 feet. After an initial rise to over 3000 feet, there is little change in altitude between Farah and Kandahar, stations 3, 4, and 5. Station 6 lies southeast of Kandahar close to the road to Spinboldak on the Pakistan frontier. North of Kandahar there is an almost imperceptible rise for 200 miles across a wide plain, with the hills scarcely visible in the distance (stations 7-11), reaching 8400 feet a little beyond Ghazni, station 12. Over the last 70 miles to Kabul the road winds through more hilly country and drops to just below 6000 feet.

The continuation of the main road north from Kabul towards Kunduz passes through essentially similar terrain, though more extensively cultivated. Between Charikar and Jabatus-Siraj, in the foothills of the Hindu Kush at about 5300 feet (station 22), the terrain is relatively bare with remnants only of meager cultivation by wandering tribes.

Fifteen miles west of Kabul lies the well watered region of Paghman; station 21 (a) is below the village at 7400 feet and 21 (b) above the village at 8500 feet. Immediately above the village, the high peaks over 13,000 feet may keep their snow throughout the year, and pockets of snow were lying very much lower. The remarkable feature of this village is the abundant water supply, hence well cultivated fields extending far into the plains below.

East of Kabul, the recently completed new road to the Khyber Pass runs for 7 miles across flat cultivated country and then drops rapidly to Sarobi. In only a few places does the gorge widen sufficiently to allow a little cultivation, such as station 13 at 4300 feet, but after 20 miles the valley becomes wider with paddy fields and orchards following the river, though this strip abruptly terminates in bare, stony hillsides (station 14). Towards Jalalabad the paddy fields become extensive (station 15).

Running back west-southwest from Jalalabad is the old Jalalabad-Kabul road, via Nimla and the Lataband Pass. In the immediate vicinity of the river this region is well cultivated, but otherwise the terrain is typical of a former vast river bed, with numerous large, rounded pebbles and sandy or earthy patches (station 16b). The tributary of the Surkhab River was flowing, doubtless originating from the extensive snow cover on the Shinwari Morga on the Pakistan frontier. After fording the river (station 16a), water was seen in a number of small but rocky and steep gullies and roadside streams, though there was no cultivation (station 16c).

The province of Khost, lying southeast of Kabul immediately adjacent to

the Pakistan frontier, was also visited. This is one of the few forested areas in Afghanistan, with conifers on the steep upper slopes and passes between 8000 and 10,000 feet. The town of Khost, at 4300 feet, lies in a well watered and cultivated plain (station 19a), but the rest of the area comprises a series of steep and isolated valleys, with occasional cultivation. Station 17 occurs near Narai at a pass of 8000 feet, station 18 in a river bed at about 6700 feet, and station 20a is also at the top of a pass of 8000 feet, above Waza.

Below an altitude of about 6000 feet, between Khost and the surrounding villages, a form of bushy palm, growing mainly knee to waist high but occasionally higher, is a striking form of vegetation. Though sometimes occurring in isolation, these palms often form dense forests covering many acres of ground. The cut palm fronds are used for matting and the fruits eaten by the local Pushtan tribesmen. The abrupt termination of these palms is probably due to the winter frost line. In no other region visited was a similar type of vegetation seen.

The Afghan summer is long, hot, and dry, though "unseasonable" rains fell in and to the east of Kabul on 16 and 17 July. It rained at Paghman on 19 July and this brought a fresh snow cover to the mountains above the village. Some rain fell in the region of Jalalabad on 28 July. Overall temperatures were variable because of the wide range of altitude. The hottest region was the southern stretch between Farah and Kandahar. In mid-July at 1600 hours in Farah a shade temperature of 45° C. was recorded. Mid-day shade temperatures were about 40° C. even in late August, though by this time the nights were noticeably cooler, and sand temperatures at noon rose as high as 61° C. At an altitude of 5000 feet, a minimum of 14.5° C. was recorded at 0500 hours when the ground temperature was 10.5° C. On one occasion the ground temperature rose from 23° C. at 0530 hours to 61° C. at 1130 hours. The behavior of the lizards was closely linked to these temperature fluctuations, as discussed elsewhere.

In late August the visibility was clearer than in mid-July and a few clouds were collecting in the sky, indicating an increase in relative humidity; this seemed to be coupled with some flowering of the sparse desert flora.

On many occasions persistent strong winds were experienced, particularly in the desert regions. These generally blew up suddenly towards dusk and lasted a few hours only, but sometimes the gales would blow all night. They were particularly persistent between Herat and Islam Qala and also at Charikar. "Dust devils" were frequently encountered, building up and dying down in half an hour or less.

At higher altitudes, such as at Ghanzi, Paghman, and the mountains between Gardez and Khost, temperatures were correspondingly lower. At 10,400 feet near Gardez, 25° C. was recorded at 1100 hours in mid-July. However, at Sarobi

TABLE 1. *Temperatures recorded during collecting trip in Afghanistan.*

<i>Date</i>	<i>Elevation (feet)</i>	<i>Time</i>	<i>Air (true shade)</i>	<i>Air (shade of low bush)</i>	<i>Substrate</i>	<i>Remarks</i>		
Station 16(a)								
July 29	3500	06:00	21.0		21.0	sand		
		08:00	28.5					
		12:00	31.5		48.5	sand		
		13:00		44.0	58.0	sand		
Station 22								
Aug. 8	5300	09:00	31.0					
		10:45	34.0	46.0	52.0	sand		
Aug. 9		08:30	31.0					
Station 10								
Aug. 23	7300	06:00	13.0					
		07:15	20.0					
		09:45	28.0		41.0	sand		
		11:00	35.0		42.0	sand		
		14:00	39.0		58.0	sand		
		15:30	33.5		47.0	sand		
		20:15	25.5		25.0	sand		
Stations 7, 8, 9								
Aug. 24	7300	05:30	14.5		10.5	hard-baked fine earth		
		06:00	16.0		14.0			
		07:00	19.0		19.0			
		7200	08:00	23.0	25.0		32.0	
		6700	09:00	26.0	27.0		36.0	
		6500	10:00		29.0		42.0	
		6350	11:00		35.0		52.0	
		6050	12:30		38.0		47.0	
			14:30		33.0		51.0	
			15:30	33.0	35.0		43.0	
		5700	16:30	33.0			38.0	
		5350	18:30	33.0			33.0	
		5000	20:00	27.0			26.0	
			21:15	26.0			22.0	
		Station 6, 7						
Aug. 25	5000	02:30	18.0		16.5	hard-baked earth		
		05:30	14.5		15.5			
		06:30	17.0		18.5			
		07:30	20.5	21.0	23.0			
			27.0	26.5	33.0			
			29.0	29.0	50.0			
		4100	09:30	29.0			50.0	
		3850	14:00	39.0			52.0	fine gravel
		3800	15:15	45.0				
			16:30	39.0			47.0	sand

TABLE 1. Continued.

<i>Date</i>	<i>Elevation (feet)</i>	<i>Time</i>	<i>Air (true shade)</i>	<i>Air (shade of low bush)</i>	<i>Substrate</i>	<i>Remarks</i>
Station 6, 7						
Aug. 25						
		18:00		35.0	35.0	baked earth
		19:40	31.0		32.0	
		22:00	27.0		26.0	
Station 6(b) through Kandahar and on toward Girishk						
Aug. 26 3800						
		00:30	27.0		26.0	fine hard earth
		05:30	18.0		19.0	
		06:30	20.0		22.0	
		07:30	24.0		25.0	
		08:30	26.0	26.0	45.0	
		09:45		36.0	52.0	fine sand
		14:00	33.5		50.0	Kandahar
	3600	16:00	36.0	38.0	52.0	fine earth
		19:15	31.0		30.0	
		21:30	28.0		27.0	sand
Aug. 27 3400						
		05:00	19.0		19.5	
		06:15	18.0		18.0	
		08:00	23.0		24.0	
		11:30		37.0	50.0	
		12:30		38.0	59.0	
		14:00	33.5			Girishk, under tree
		18:00	38.5		48.0	loose stone chips
		19:00	32.0		31.0	
		21:00	28.0		28.5	
Stations 2, 4, 5						
Aug. 28 3500						
		05:30	24.5		23.0	stony
		06:30	26.0	23.5	26.5	
	3200	09:30		38.0	43.0	pebbly
	3125	11:30		40.0	61.0	sandy
	4200	19:30	29.0		31.0	stone chips
Aug. 29 3600						
		05:45	26.0		23.5	
		07:30	30.5		30.0	
	4300	11:00		35.5	45.0	baked earth
	4150	12:00		43.0	62.0	
	5550	13:00		35.0	43.0	strong wind

and Jalalabad, though lower than Kabul and comparable with the southern regions, temperatures were not excessive, but this may have been a local cooling as a result of the rain mentioned previously. A midday shade temperature of only 31.5° C. was recorded on 29 July near Jalalabad, at 3500 feet. Although

not measured, the relative humidity of this region was obviously higher than at Kabul.

All temperatures recorded were taken with a good laboratory-grade thermometer, held vertically. A true air temperature was taken when suitable shade was available, but on other occasions a "shade" temperature within a bush was taken. The surface temperature was taken by just covering the bulb of the thermometer in the surface of the sand or earth and moving the thermometer several times until a steady reading was observed.

All elevations are given in feet above sea level, measured with a good, fully compensated pocket aneroid altimeter. In most cases they are accurate to within 100 feet, but if a checking point was not available may vary to 200 feet.

Longitude and latitude as well as locality names are taken from reference to the 1:1,000,000 map series published by the War Office, G.S.G.S. no. 2555, sheets N.I. 41 and 42, N.H. 41 and 42. Some roads appearing on these sheets have been altered considerably since the last revisions (1944 and 1955).

COLLECTING STATIONS

Station 1: Herat to Islam Qala, $34^{\circ}22'N.$, $62^{\circ}10'E.$ Elevation 3100 to 2600 feet.

Flat, dry, stony country close to road, sparsely covered with low thorny bushes; occasional dry river beds. Low hills to north of road.

Station 2: Near Shindand, $33^{\circ}00'N.$, $62^{\circ}30'E.$ Elevation 4150 feet.

Open flat country, similar to station 1.

Station 3: 20 miles east of Farah, $32^{\circ}20'N.$, $62^{\circ}15'E.$

Rocky dry hills.

Station 4: 40 miles west of Girishk, $32^{\circ}00'N.$, $64^{\circ}10'E.$ Elevation 3500 feet.

Bare, rocky hills, rising out of flat, open, dry country.

Station 5: 20 miles east of Girishk, $31^{\circ}43'N.$, $64^{\circ}45'E.$ Elevation 3400 feet.

Small sand dune area, sparsely covered with low prickly shrubs; isolated within flat open plain.

Station 6:

(a): 20 miles southeast of Kandahar, $31^{\circ}23'N.$, $65^{\circ}53'E.$ Elevation 3800 feet.

i: Open flat country, bare of vegetation. Parts had been cultivated previously. Stony patches with dry stream gullies.

ii: Sandy river bed within above environment.

(b): Southeast of Kandahar, $31^{\circ}20'N.$, $65^{\circ}50'E.$ Elevation 3800 feet. Sand dunes on the edge of extensive dune area. Dark sand with occasional spiny shrubs.

Station 7: 60 miles north of Kandahar (10 miles north of Qalat), $32^{\circ}10'N.$, $67^{\circ}00'E.$ Elevation 5000 feet.

Close to main road, not far from Tarnak River. Flat, open, dry country; occasional low spiny shrubs.

Station 8: 80 miles north of Kandahar (village of Tazi), $32^{\circ}23'N.$, $67^{\circ}18'E.$ Elevation 5350 feet.

Environment similar to station 7.

Station 9: Approximately 20 miles south of Mukur (village of Ghaomi-Faringi), $32^{\circ}38'N.$, $67^{\circ}30'E.$ Elevation 7000 feet.

Environment similar to station 7, but sandy in places.

Station 10: Between Ghazni and Mukur, $32^{\circ}53'N.$, $67^{\circ}48'E.$ Elevation 7300 feet.

Environment similar to station 7, but sandy in places.

Station 11: Just north of Ghazni (Qala Nau), $33^{\circ}35'N.$, $68^{\circ}28'E.$ Elevation 7400 feet.

Environment similar to station 7, but sandy in places.

Station 12: 20 miles north of Ghazni. Highest point of pass, $33^{\circ}40'N.$, $68^{\circ}30'E.$ Elevation 8400 feet.

Large rocky outcrops with deep crevices, in dry, hilly, rocky country.

Station 13: Between Kabul and Sarobi, 30 miles east of Kabul, $34^{\circ}33'N.$, $69^{\circ}35'E.$ Elevation 4300 feet.

Narrow valley with rice fields, well irrigated by Kabul River. Surrounding hills dry and rocky.

Station 14: Between Sarobi and Jalalabad, $34^{\circ}30'N.$, $70^{\circ}00'E.$ Elevation 2900 feet.

Irrigated fields, earth banks, surrounded by open, flat, dry country; rocky hills to south of road.

Station 15: 10 miles west of Jalalabad, $34^{\circ}30'N.$, $70^{\circ}22'E.$ Elevation 2300 feet.

Environment similar to station 14.

Station 16: 5 to 10 miles east-northeast of Nimla, on old Kabul-Jalalabad road, and about 10 miles southwest of the village of Balabagh, $34^{\circ}19-21'N.$, $70^{\circ}10-15'E.$ Elevation 3500 feet.

(a): Bed of flowing river, with sandy and rocky islets.

(b): Flat, open country; some small bare and rocky hills.

(c): Steep river valley; rocky outcrops and steep earth banks.

Station 17: Northwest of Narai. $33^{\circ}31'N.$, $70^{\circ}04'E.$ Elevation 8000 feet.

Top of a pass; large rocky outcrops, stunted woody shrubs.

Station 18: About 30 miles east-northeast of Gardez (village of Meiden Khula), $33^{\circ}40'N.$, $69^{\circ}50'E.$ Elevation 6700 feet.

Dry river bed; fine gravel, with small woody shrubs; valley in conifer forest.

Station 19:

(a): Khost, $33^{\circ}21'N.$, $69^{\circ}57'E.$ Elevation 4300 feet.

Open, irrigated agricultural plain.

(b): About 12 miles west of Khost. Elevation 4500 feet.

Small pools among hills close to the river.

Station 20: 40 miles west of Khost. 33°25'N., 69°22'E. Elevation 8000 feet.

Above the village of Waza, at top of pass. Open sunny fields above river valley.

Station 21: Paghman, 15 miles west of Kabul, 34°36'N., 68°56'E.

(a): Below village; open, bare, rocky, low hill. Elevation 7400 feet.

(b): Above village; large rocky outcrops, close to river and streams in steep valleys. Elevation 8500 feet.

Station 22: Charikar, 35°05'N., 69°10'E. Elevation 5300 feet.

Open, dry, flat country; spiny shrubs, sometimes dense; rocky in places.

Station 23:

(a): Kabul, 34°30'N., 69°10'E. Elevation 6000 feet.

Walls of International Club.

(b): Entrance to gorge toward Sarobi, 7 miles east of Kabul. Slightly lower elevation than station 23a.

NOTES ON COLLECTION

Class AMPHIBIA

Order SALIENTIA

Family BUFONIDAE

Genus **Bufo** Laurenti

Bufo andersoni Boulenger.

Bufo pantherinus (not Boie), ANDERSON, 1871, Proc. Zool. Soc., 1871, p. 203.

Bufo andersonii BOULENGER, 1883, Ann. Mag. Nat. Hist., ser. 5, vol. 12, p. 163 (type locality: India: Ajmere [restricted by Leviton, Myers, and Swan, 1956]).

MATERIAL EXAMINED (1). CAS 96172, station 19b, July.

REMARKS. This appears to be the first record of this species from Afghanistan. Its presence is not surprising in view of its recorded distribution, which includes all of northern India from the Ganges Basin through Rajputana and Punjab to Sind, and north to Nepal and Kashmir. If Nieden (1923) is correct in assigning *Bufo oblongus* Nikolsky to the synonymy of *B. andersoni*, the species also occurs in eastern Iran. It has also been reported from southern and eastern Arabia.

The single specimen, a female, contains ripe ova. The stomach contains a few beetle remains. It was collected along with *Rana cyanophlyctis* in a rocky pool close to the river. Length from tip of snout to tip of urostyle: 54 mm.

Family RANIDAE

Genus **Rana** Linnaeus

Rana cyanophlyctis Schneider.

Rana cyanophlyctis SCHNEIDER, 1799, Hist. Amph., vol. 1, p. 137 (type locality: eastern India).

MATERIAL EXAMINED (15). CAS 96168–96170, station 19b, July. CAS 96179–96188, 103776–103777, station 15, July.

REMARKS. Indicative of the limitation on our knowledge of the Afghan fauna is the fact that this widely distributed frog has not been recorded previously from Afghanistan. It is common from eastern Iran to the Malay Peninsula and occurs up to 6000 feet in the Himalayas. It is also reported from southern Arabia.

The specimens include four adult females and a recently transformed young from Khost. An adult male, adult female, two recently transformed young, and six larvae in various stages of transformation comprise the series from 10 miles west of Jalalabad.

Females from the Jalalabad region contain ripe ova. Stomach contents of Khost specimens include a large beetle and ants. The largest female measures 63 mm. from tip of snout to tip of urostyle, the male measures 45 mm., and a newly transformed young 20 mm.

At station 15, these frogs were found near the main road in an artificial pool fed by water trickling directly from the rocks. They were very wary, diving quickly beneath the water, and were collected by shooting with an air pistol. The larvae were also obtained here. The frogs were lying motionless in the water, basking in the sunshine at about 1030 hours. Frogs were also seen in other ditches and ponds nearby, but it cannot be assumed that they were the same species. They were heard calling at night, a call distinctly different from that of *Rana ridibunda*, which was probably heard at the same time. No specimens of this latter species were collected, however.

The three specimens from station 19b were taken from a rocky pool close to the river.

Rana sternosignata Murray.

Rana sternosignata Murray, 1885, Ann. Mag. Nat. Hist., ser. 5, vol. 16, p. 120 (type locality: Quetta, West Pakistan).

MATERIAL EXAMINED (1). CAS 96171, station 20, 22 July.

REMARKS. The single specimen, a female, measures 46 mm. from tip of snout to tip of urostyle, and is not in reproductive condition. Various kinds of beetles are in the stomach. This frog was taken in late afternoon from an irrigation ditch at an elevation of 8000 feet in a field above the river gorge. Several others were seen on the grassy banks and in the water.

Class REPTILIA
Order SQUAMATA
Family AGAMIDAE
Genus *Agama* Daudin

Agama agilis Olivier.

Agama agilis OLIVIER, 1807, Voy. Emp. Othoman, vol. 4, p. 394, and Atlas, pl. 29, fig. 2 (type locality: neighborhood of Baghdad, Iraq).

MATERIAL EXAMINED (6). CAS 96271, station 3, 11 July. CAS 97972, 97975, station 5, 27 August. CAS 97990, station 6a(i), 25 August. CAS 98117-98118, station 1, 31 August.

ADDITIONAL MATERIAL.¹ RJC 248, station 6a(i), 25 August. RJC 259, station 2, 29 August. RJC 260, 273-276, station 1, 31 August. RJC 277, station 10, 23 August.

REMARKS. These lizards were common in dry stony or baked earth localities, relying upon the sparse prickly bushes as hiding places. They were seen at this time of year soon after sunrise. In the early hours of daylight they were sluggish and were often collected without much difficulty. Several were caught at 0715 hours when air temperature in the bushes was 24.0° C., the ground temperature 25.0° C., and later between 0830 hours and 0930 hours in a strong wind, when the air temperature in bushes was 32.0° C., ground temperature 37.0° C. Later in the day, they were frequently seen by the roadside, on the top of piles of earth or stones, sometimes nodding their heads in the familiar agamid manner, and in early July would climb into low bushes during the hottest hours of the day. One was taken at midday when the air temperature was 43.0° C., the ground temperature 62.0° C. At 1500-1530 hours, when the air temperature was 40-45° C., these agamids were still highly active (see Anderson, 1963, for further discussion of *Agama agilis* and environmental temperature).

These lizards were collected over a wide area at elevations between 2600 and 3800 feet. They were always collected in similar environmental situations.

They were variable in color; the throats of males turned vivid blue when the animals were handled, the dorsal pattern becoming paler, the ventrolateral aspect becoming suffused with purple.

When seeking refuge in a bush, they would climb into the thickest part, and no amount of poking would drive them out.

As used here, the name *Agama agilis* refers to a complex of populations distributed from lowland Jordan, Iraq, northern Arabia, and southwestern Iran east to West Pakistan, western Punjab, and Afghanistan, and north to the Asian steppes of the USSR (coasts of the Caspian Sea, east to the Tarbagatai, and north to the steppes of the lower reaches of Irgiz). Various names have been applied to these populations, viz. *Agama sanguinolenta* (Pallas, 1814) [type locality: Kum-Ankatar on the Terek River, Caucasus, USSR]; *Agama persica* Blanford, 1881 (type locality: Deh Bid and Kazerun, Iran [= *A. blanfordi* Anderson, 1966a, substitute name]); *Agama isolepis* Boulenger, 1885 (type locality: between Bampur and Magas, Iran [restricted by Anderson, 1966b]); *Agama kirmanensis* Nikolsky, 1899 (type locality: Kurin, Kerman Province, Iran); *Agama kirmanensis brevicauda* Nikolsky, 1907 (type locality: Kochrud,

¹ Material in the personal collection of Richard J. Clark and not examined by the junior authors.

Irak-Adschemi, Iran). The relationships of these various nominal forms are currently under investigation.

The largest male has a snout-vent length of 80 mm., tail 125 mm. The largest female measures 72 mm. from snout to vent, the tail 110 mm. There are 60-71 scales round the middle of the body, the counts falling within the range (60-76) of specimens previously reported from Afghanistan (Leviton, 1959; Leviton and Anderson, 1961).

CAS 97975 and 97990 contain small eggs in the ovaries. The remains of grasshoppers form the bulk of the stomach contents.

Agama caucasica (Eichwald).

Stellio causicus EICHWALD, 1831, Spec. Ross. Polon., vol. 3, p. 187 (type locality: USSR: Tiflis and Baku, Transcaucasia).

Agama caucasica, BOULENGER, 1885, Cat. Lizards British Mus., vol. 1, p. 367.

MATERIAL EXAMINED (7). CAS 96246, station 18, 21 July. CAS 96247, station 18, 24 July. CAS 96248-96249, station 17, 23 July. CAS 96251-96252, station 21b, 19 July. CAS 98969, station 12, 22 August.

ADDITIONAL MATERIAL. RJC 30-31, 55-60, 63, station 21b, 19 July. RJC 209, 211-213, station 12, 22 August.

REMARKS. These large agamids were all taken at elevations between 8000 and 8500 feet, and one was seen at 10,400 feet on a mountain pass above Gardez. They were only abundant locally, many miles separating one colony from another. They were always associated with rocky outcrops. Those at Paghman were also found on stone walls, and boulders by the river. They were particularly abundant in a narrow valley with a fast-flowing stream. They hid in rock crevices at the slightest sign of danger, and were difficult to approach. They were seen primarily in the late morning and early afternoon. At Ghazni, air temperature of 30° C. was recorded by 1400 hours, the exposed rock surface about 40° C. when many of these lizards were seen. There was a tendency when basking for the head and shoulders to be raised well clear of the rock surface. Often they remained on the warm rocks in late afternoon after these were in shadow. At Ghazni these lizards were more abundant in late August than they had been in mid-July, sometimes five or more aggregating round a single rock crevice.

The single female sent to the Academy, CAS 98969, has a snout-vent length of 75 mm. and a tail length of 108 mm. The largest male measures 132 mm. from snout to vent, tail 184 mm. The measurements of the smallest juvenile (male) are 61 and 91 mm. respectively.

The number of scales round the middle of the body varies from 145-179 in this series. Specimens recorded earlier from the vicinity of Shash Gao, also in eastern Afghanistan (Leviton and Anderson, 1963), have 193-221 scales round

the middle of the body. The higher count in this latter series appears due to the fact that the enlarged scales of the flank are fewer and cover a smaller area in these specimens. In Iranian specimens the count varies from 112–170. In view of the high counts of some Afghan specimens, the status of *Agama microlepis* (Blanford) should be examined. This form, which appears to replace *A. caucasica* in the higher elevations (above 8000 feet) of the Central Plateau in Iran, but not yet recorded from Afghanistan, is said by Blanford (1876) to have over 200, usually 210–220 scales around the body.

Identifiable stomach contents consist of leaves and beetles.

Agama nupta De Filippi.

Agama nupta DE FILIPPI, 1843, Giorn. Ist. Lomb. e Bib. Ital., vol. 6, p. 407 (type locality: Persepolis, Iran).

MATERIAL EXAMINED (3). CAS 96196–96197, 96210, station 16c, 30–31 July.

ADDITIONAL MATERIAL. RJC 131, station 16c, 31 July. RJC 132, midway between stations 23 and 13, beginning of mountain pass, 17 July.

REMARKS. Adults and juveniles were locally common on rocky cliffs and boulders in the vicinity of flowing water. The young were more easily caught than the adults, as they were seen on the open stony hillside, whereas the adults were on the cliff faces where there were deep clefts and large boulders. Seldom more than two were seen together. They were active throughout the day. The silhouette of one of these lizards could be seen from a considerable distance on any prominent outcrop. They were much more striking in the field than *A. caucasica* by reason of their greater bulk and dark tail. Station 23b was visited on three occasions. The first, in mid-July, was an overcast day, with thunder showers at intervals; a single specimen was seen under a rock and collected. No specimens were seen the next day, although the sky was clear. However, in late August these lizards were fairly abundant on the rock outcrops close to the river. On a newly constructed road 25 miles northwest of Delaram, two agamas were seen in a rock crevice at mid-day. They were sight-identified as *A. nupta* because of their dark tails.

The largest specimen sent to the Academy, a mature female, measures 115 mm. from snout to vent, the tail 220 mm. The smallest juvenile has a snout-vent length of 39, the tail 55 mm. (tip missing). There are 93–106 scales round the middle of the body of these specimens.

CAS 96196 has eggs in the oviducts, the largest at least 12 mm. long.

Stomach contents of CAS 96210 include orthopteran, beetle, and lycosid spider remains, as well as several small rocks.

Agama rudrata Olivier.

Agama rudrata OLIVIER, 1807, Voy. Emp. Othoman, vol. 2, p. 429, pl. 29, fig. 3 (type locality: Persia and northern Arabia).

MATERIAL EXAMINED (11). CAS 96234-96239, 96241-96244, station 22, 7 August. CAS 97991, station 11, 22 August.

ADDITIONAL MATERIAL. RJC 179-180, 185-188, 196-205, station 22, 7 August. RJC 245, station 11, 22 August.

REMARKS. The distinctions between *A. megalonyx* (Günther) and *A. ruderata baluchiana* Smith are not clear on the basis of the literature and the material examined. Smith (1940), who examined four specimens from Ghazni, which he called *A. ruderata*, commented on this problem:

"The four specimens collected show considerable variation in the size and arrangement of the enlarged scales, and in the disposition of the colour pattern, so much so that I must now regard my *A. r. baluchiana* and *A. megalonyx* Günther, both based on single individuals, as identical with *ruderata*.

"The precise locality of origin of *A. megalonyx* is not known, but Capt. Griffiths, who obtained it, was present at the taking of the town of Ghazni, and it is known that he collected in the vicinity."

The color pattern in the present series is quite variable; the six light vertebral spots are in the center of dark transverse bars. In one adult male (CAS 97991), and in the juveniles, these spots are clearly margined with very dark brown; in the second male and the adult female (CAS 96234), the dark edging of the spots is less pronounced. In CAS 97991 there are three additional series of dark-edged spots on each side of the vertebral line, within the dark transverse bars (which are narrower than the interspaces). There are also dark bars enclosing light ocelli on the limbs and tail, these markings much more distinct in some specimens than in others. A dark bar crosses the head between the eyes, and there are two dark bars on the temporal region behind the eyes. In life the female was silver-gray above, the transverse bars red. The venter was white, the throat pink. The males had dark gray or brown crossbars, the vertebral and dorsolateral spots white. The venters were white, flecked with gray, the throat slaty or with longitudinal gray stripes.

The dorsal pholidosis is extremely heterogeneous, the size of the small dorsals being quite variable. The strongly enlarged scales, also variable, are more than twice the size of the smallest dorsals. They occur singly and in groups, but the vertebral spots are encircled by enlarged scales. All dorsals are strongly keeled, imbricate, and mucronate; many of the enlarged scales, which are longer than broad, are strongly upturned. The ventrals are feebly keeled.

We have compared our specimens with Minton's material from West Pakistan. They differ in no obvious respect from lizards identified by Minton as *A. megalonyx* (AMNH 96141-96142, Sibi District, near Kolpur). Considering the variation in the heterogeneity of the dorsal pholidosis mentioned by Smith (see above) and observed in our material, we do not feel that specimens identified as *A. megalonyx* and our Afghan specimens differ significantly from AMNH

88585 (West Pakistan: Sibi District: Kach) identified by Minton as *A. ruderata baluchiana*. This latter specimen has a less distinct color pattern, but the basic elements of the pattern can be distinguished.

Günther (1864) pointed out in his original description of *Trapelus megalonyx* that the claws of the fingers were much longer than those of the toes. Boulenger (1885) used this as a character to separate *A. megalonyx* in his key. This difference in claw length is easily seen in CAS 97991, but is less obvious in the other male and still less so in the female and juveniles.

There are 4–11 glandular preanal scales in a single row in the males, a few such scales barely discernible in the female.

These specimens have 68–83 (mean 75.3) scales round the middle of the body. Minton gives 71–88 (mean 79.3) as the range in his series of *A. megalonyx*. His specimens of *A. ruderata baluchiana* had 80–82.

The female has a snout–vent length of 75 mm., the tail 105 mm. The largest male has corresponding measurements of 67 and 95 mm. The juveniles are recently hatched, judging from the umbilical scars, which are unhealed. The smallest is 28 mm. from snout to vent, the tail 32 mm.

The female has eggs in the oviducts, the largest 13 mm. long.

Those collected at Charikar were found on a broad plain at an elevation of 5300 feet and were most numerous close to the road. The area of 1 to 2 miles to the base of the hills was explored, but few were seen there. This area is probably cultivated from time to time by the wandering tribes, while the strip either side of the road is left relatively undisturbed. The habitat was bare, dusty, and in patches stony, with sparse vegetation. The lizards were seldom found near bushes, but were active on exposed terrain with little cover or protection. When disturbed they would run for a few yards, then stop and remain motionless, blending well with their surroundings. *Eremias guttulata watsonana* was active in the same area. The lizards were active throughout the day but tended to hide during the hottest period, becoming more active by evening. They were most abundant in mid-morning.

Specimens collected near Ghazni were taken close to the road at an elevation of 7400 feet. There was no vegetation in the area, and the rock temperature was 40° C. (in mid-afternoon).

Genus *Calotes* Cuvier

Calotes versicolor (Daudin).

Agama versicolor DAUDIN, 1802, Hist. Nat., Rept., vol. 3, p. 395, pl. 44 (type locality: India [restricted to Pondicherry by Smith, 1935]).

Calotes versicolor, GRAY, 1845, Cat. Spec. Liz. British Mus., p. 243.

MATERIAL EXAMINED (1). CAS 96257, station 13, 11 August.

ADDITIONAL MATERIAL. RJC 175, station 13, 12 August.

REMARKS. This specimen, a female, differs from West Pakistan and Indian specimens examined in that the body is scarcely compressed, the lateral scales do not point as sharply upward, the dorsal crest is not distinct on the back, although fairly well developed on the neck. There is a black blotch on each side of the neck, extending onto the underside of the lower jaw, but not across the throat or chin; another dark area is present in the area of the eye and snout. These areas are not as well developed in specimens examined from West Pakistan and northern India. In the development of these dark areas, it agrees more with specimens from Nepal than with specimens elsewhere in the range of this species. There are faint, narrow dark crossbars on the dorsum, and a series of six scarcely discernible light, dark-edged ocelli down either side of the vertebral line. There are 44 scale rows round the middle of the body. Smith (1935) gives the range for specimens from Afghanistan and the Himalayas as 42–48. The snout–vent length is 95 mm., tail 230 mm.

When captured, the head and body were gray, with orange extending down the back to behind the forelimbs. The lips and throat were pink, the aural region orange. There were 13 dark bars on the anterior portion of tail, posterior half unmarked. The belly was dirty white.

Five individuals were seen at about 4300 feet elevation near the river. They were found principally on earth banks close to the water, and near bamboo clumps. When thick vegetation was available they sought cover in this, but the two individuals collected attempted to hide in shallow holes in the bank, from which they were easily extracted. One individual was seen in a fairly open area near an irrigation ditch, into which it dived without hesitation on being approached. Though shy, they were not difficult to approach and appeared reluctant to hide completely for long periods.

All were seen between 0600 and 1130 hours. At 0600 hours the air temperature was 23.0° C. and had risen to 34.5° C. at 1130 hours, by which time the lizards were showing more activity.

CAS 96257 contains small ovarian eggs; the oviducts are enlarged.

Although Boulenger (1885) listed three specimens of *C. versicolor* from Afghanistan, and Smith (1935) referred to Afghan specimens also, this species was left out of the previous check list (Leviton, 1959).

Specimens in the type series of *Calotes maria* Gray, *Calotes minor* Gray (= *Oriocalotes paulus* Smith [type locality restricted to Khasi Hills by Smith, 1935]), the type of *Calotes emma* Gray, and the types of *Salca horsfieldi* Gray were reported by Gray (1845) as coming from "Affghanistan." Günther (1864) regarded all of this material, coming from the collections of the East India Company, as having incorrect locality data. Subsequent authors have rightfully disregarded these records. It seems likely that at least two of the three specimens of *Calotes versicolor* listed from Afghanistan by Boulenger (1885)

are also in error, since they were part of this material. The source of the third specimen is not recorded.

Genus *Phrynocephalus* Kaup

Phrynocephalus clarkorum Anderson and Leviton.

Phrynocephalus ornatus BOULENGER (in part), 1887, Cat. Liz. British Mus., vol. 3, pp. 496-497.

Phrynocephalus clarkorum ANDERSON AND LEVITON, 1967, Proc. Calif. Acad. Sci., ser. 4, vol. 35, pp. 227-234, fig. 1.

MATERIAL EXAMINED (2). CAS 97989 (holotype), station 6(b), 25 August. CAS 103787 (paratype), station 6(a)ii, 25 August.

REMARKS. This recently described species is readily distinguished from *Phrynocephalus ornatus* by the striking color pattern, there being a white-margined black stripe down either side, and the presence of an elongate subocular plate. The two specimens in the present collection are discussed in the paper by Anderson and Leviton cited above.

The holotype was taken just inside the extensive desert sand dunes, where the sand was deep yellow. It was caught at 1600 hours when the sand surface temperature was 47° C., the air temperature 39° C. The second specimen was found in a sandy river bed about 1000 hours when air temperature was 36° C. and sand 52° C. The behavior was similar to that of *P. ornatus*.

It would be interesting to know what ecological and behavioral differences may distinguish these two similar and previously confused species (see *P. ornatus* below).

Phrynocephalus luteoguttatus Boulenger.

Phrynocephalus luteoguttatus BOULENGER, 1887, Cat. Lizards British Mus., vol. 3, pp. 497-498 (type locality: Afghanistan: between Nushki and Helmand; Helmand).

MATERIAL EXAMINED (2). CAS 97980, 103786, station 6(b), 25 August.

REMARKS. These two juvenile females were captured just inside the extensive desert sand dunes 20 miles southeast of Kanadahar at about 3800 feet elevation. Here the sand was deep yellow in color. Sand temperature at 1600 hours was 47.0° C., the air temperature 39.0° C. When pursued, these lizards ran for a few yards over the sand, stopped abruptly, and buried themselves within two to three seconds by sinking into the sand with rapid lateral movements of the body, leaving a clear impression of the body outline. This behavior is characteristic of this species, and in contrast to other species of *Phrynocephalus* in the region (Minton, 1966).

Recognizable stomach contents consist exclusively of ants. Minton (1966) observed this species feeding on locust nymphs.

In life these lizards were brown above, with numerous cream or white and black spots. The flanks were gray, the venter white; one or two asymmetrical

black marks on the ventral surface of the tail. The snout-vent measurements are 24 and 26 mm., the tails 22 and 25 mm.

Phrynocephalus ornatus Boulenger.

Phrynocephalus ornatus BOULENGER, 1887, Cat. Liz. British Mus., vol. 3, pp. 496-497 (type locality: Afghanistan between Nushki and Helmand; Helmand).

MATERIAL EXAMINED (6). CAS 96272-96273, station 5, 12 July. CAS 97974, 103788-103790, station 5, 27 August.

ADDITIONAL MATERIAL. RJC 22, station 5, 12 July. RJC 261, station 5, 27 August.

REMARKS. In a recent paper, Anderson and Leviton (1967b) demonstrated that *Phrynocephalus ornatus* Boulenger was a composite species, the type series containing specimens of *P. clarkorum* Anderson and Leviton (see above) as well as *P. ornatus* (as restricted and redefined by Anderson and Leviton). The present specimens were discussed in that paper.

The specimens were taken in two small dune areas about 5 miles apart. A few were caught on the bare stony terrain bordering the sand. Two were taken on 12 July at 0600 hours when the air temperature was already 35° C. On 27 August they were not active until after 0800 hours, when the air temperature was 23° C., the ground 24° C. They became abundant by 1100 hours (air temperature 37° C., ground 50° C.) and a few were seen in the direct sun at 1230 hours when the sand surface was 59° C. They held their bodies well clear of the sand, as they usually did when running. When disturbed, they would run at considerable speed across the open sand, frequently taking cover under a low bush, or flattening themselves against the sand, with which they blended precisely. At 0900 hours they ran at an estimated speed of 4 m.p.h. (fast walk) in a straight line, but two hours later it was difficult to overtake them at a run. After two or three minutes of pursuit they grew tired and were easily collected. They rarely hid down holes, nor did they attempt to bury themselves in the sand. Sometimes they would stop in their tracks, lash their tails, and curl them over their backs, revealing the conspicuous black marks.

Phrynocephalus scutellatus (Olivier).

Agama scutellatus OLIVIER, 1807, Voy. Emp. Othoman, 4th ed., vol. 3, p. 110, Atlas, pl. 42, fig. 1 (type locality: Iran: Mt. Sophia, near Isfahan).

Phrynocephalus scutellatus, SMITH, 1935, Fauna British India, vol. 2, pp. 229-230.

MATERIAL EXAMINED (3). CAS 97992, station 10, 23 August. CAS 97978-97979, station 6(a)i, 25 August.

REMARKS. The largest specimen (CAS 97979), a male, measures 42 mm. from snout to vent, the tail 60 mm. The female, with a snout-vent length of 40 mm., tail 55 mm., has a few very small eggs in the ovaries. CAS 97992, a juvenile, measures 30 mm. from snout to vent, tail 40 mm.

Recognizable stomach contents consist of ants.

The juvenile was collected at about 7300 feet elevation at about 0945 hours when air temperature was 28° C., sand temperature 41° C. *Eremias velox persica* was abundant in the same area, the habitat being bare earth, with a few sandy patches and occasional prickly bushes. The adults were collected at 3800 feet elevation, on bare, stony terrain, a mile or so from the extensive sand-hills of the region. The vegetation was extremely sparse; after running, the lizards would flatten themselves against the purplish stones, with which their color pattern blended remarkably well. The time was 1515 hours, air temperature 45° C.

In life, the adults were buff-gray above, with white specks; a broad gray dorsolateral stripe, orange ventrolaterally; six dark gray transverse bars on upper surface of tail; hindlimbs buff-orange, with two gray bars; two longitudinal orange stripes on neck. Venter white, the tail with five black bars ventrally. The male had a purple patch on the dorsum.

Family GEKKONIDAE

Genus *Alsophylax* Fitzinger

Alsophylax cf. *pipiens* (Pallas).

Lacerta pipiens PALLAS, 1811, Zoogr. Ross-asiatica, p. 27 (type locality: USSR: Mt. Bogdo, near the Volga River).

Alsophylax pipiens, Fitzinger, 1831, Syst. Rept., p. 90.

MATERIAL EXAMINED (4). CAS 96214-96217, station 23a, 25 July.

ADDITIONAL MATERIAL. RJC 138-139, 181-183, station 23a, 14 August.

REMARKS. Leviton and Anderson (1963) assigned three specimens from Afghanistan to this taxon, at the same time calling attention to the fact that Bedriaga had shown in 1912 that the tuberculate gecko referred to "*pipiens*" by Lichtenstein and subsequent workers was not, in fact, synonymous with *Lacerta pipiens* of Pallas, a non-tuberculate form. Terentjev and Chernov (1949) in synonymizing *Alsophylax lacvis* Nikolsky (as well as *A. microtis* Blanford) with *A. pipiens* imply that the dorsum may or may not have enlarged, tuberculate scales, although their description is of a tuberculate gecko. Mertens (1965) recorded an additional specimen from Afghanistan, but cast doubt on our identification of the Afghan form with the name *A. pipiens*, since specimens from Mt. Bogdo in the Senckenberg Museum have heterogeneous squamation.

Recently, we have been able to examine several small geckos from the USSR referable to *A. pipiens* (according to Terentjev and Chernov, 1949). These include CAS 99724, from Kisy'l-Aryat, Uzbekistan; CAS 99725-6, from Lake Sudtschje, Ustjurt, Kazakhstan; MCZ 5312, 84338-84339, from Mt. Bogdo; MCZ 7127, from Yarkand, Sinkiang (China). These specimens are highly variable in the nature of the dorsal scales, there being a complete transition from flat, imbricate, heterogeneous scales (CAS 99724 and MCZ 84339) through a dorsal pholidosis of small, subimbricate scales interspersed with distinctly enlarged,

slightly swollen, imbricate scales, irregularly distributed, to the condition of tubercular, weakly keeled scales arranged more or less regularly in transverse rows among granular scales (CAS 99725–99726). The specimens appear to agree with one another, and with the description in Terentjev and Chernov (1949) in all other respects. The color pattern is indistinct, but consists of transverse dark bars.

The Afghan material differs from all of the above specimens in the following particulars: dorsal scales uniform, homogeneous, smooth, granular; no enlarged tubercles; nostril between the rostral, first supralabial, and two or three nasals; digits longer, more slender, the articulations between the elements more pronounced, although not as distinctly angularly bent as in *Cyrtodactylus*. The habitus is more depressed, the ear is larger, being one-third to one-half the diameter of the eye; there are 10–11 upper and 8–10 lower labials, the most posterior not distinctly different in size from the scales following, while in the Russian material there are 7–8 upper and 5–6 lower labials, distinctly larger than the scales following. There is a distinct dark brown mark from nostril, through eye onto temporal region and across occiput (sometimes interrupted). There is a dark transverse bar on neck and an additional 5–7 dark undulating bars on body, the last on the sacral region; these are often irregular, in that two or more may be interconnected; tail with 11–12 bars.

In a paper overlooked by Leviton and Anderson in 1963 and by Mertens in 1965, Wettstein (1960) recorded a specimen from Kabul. He identified his specimen as *Alsophylax persicus* Nikolsky and reassigned this species to the genus *Cyrtodactylus*. We have examined this specimen and it, too, belongs to the present species.

The Afghan form is at once distinguished from *Alsophylax persicus* Nikolsky (= *Tropicolotes persicus*, see Minton, Anderson, and Anderson, in press) by the presence of 6–7 preanal pores, visible even in females and young (or their position clearly indicated by distinctly enlarged scales), by the granular, rather than imbricate, dorsal scalation, and the small postrostral internasal scales, which do not border the nostril.

The largest specimen in this collection, a male, measures 40 mm. from snout to vent, tail 46 mm. A female also has a snout–vent length of 40 mm., the tail regenerated. The immature specimen is 33 mm. from snout to vent. Gasperetti collected a juvenile in mid-May measuring 27 mm. from snout to vent, the tail 31 mm.; his female had a snout–vent length of 42 mm., tail 52 mm. (Leviton and Anderson, 1963).

These geckos were found on the walls and mosquito net coverings of the windows, both inside and out of the International Club at Kabul. They were not as abundant as was *Cyrtodactylus scaber* collected on walls at Khost, and the same individuals could be recognized night after night. All were found at

night, and in contrast to *Cyrtodactylus scaber*, they tended to be found in patches of artificial light on the walls. They were fairly alert when approached and would run swiftly up the walls and hide in cracks or in the semirodden wood of door posts and window frames.

In life, the dorsal ground color was a pale fawn, the posterior margins of the dark bars being white. The internal organs could be seen through the translucent white or gray venter. The lip shields were minutely spotted with gray.

Genus *Bunopus* Blanford

Bunopus tuberculatus Blanford.

Bunopus tuberculatus BLANFORD, 1874, Ann. Mag. Nat. Hist., ser. 4, vol. 13, p. 454 (types from: Iran [Bahu Kalat; Pishin; Isfandak; near Bampur; Rigan, Narmashir; Tumb Island]; and West Pakistan [Baluchistan: Mand; Saman, Dasht]).

MATERIAL EXAMINED (1). CAS 96277, station 9, 12 July.

REMARKS. This specimen, a male, collected at 7000 feet elevation, has very distinct dark transverse bars on the dorsum and agrees in this character with Blanford's syntypes from Bahu Kalat, and with Werner's types of *Gymnodactylus gabrielis* from Kalvan and Leb-e Kal, all of which have been examined by the junior authors. Iranian specimens from further west often have the dorsal bars broken up. This specimen is very similar to a specimen in the collection of Sherman A. Minton (SAM 710, ♀) from Kach, Sibi District, West Pakistan.

We have also examined MCZ 7137, from Baluchistan, collected by Maynard and McMahon, and identified by Constable (1949) as *Stenodactylus lumsdeni*. This is a specimen of *Bunopus tuberculatus* and raises the question of the status of *S. lumsdeni* Boulenger. The original description does not adequately separate the two forms, the distinction depending upon the interpretation of the digits being "shortly fringed laterally" in *S. lumsdeni*. Since both Boulenger and Smith (1935) saw specimens of *B. tuberculatus* as well as *S. lumsdeni*, we can only assume the latter to be a valid species until we have opportunity to examine the type.

Two immature, poorly preserved specimens, CAS 84690-84691, previously recorded tentatively as *Agamura persica* (Leviton, 1959), on subsequent examination prove to be *Bunopus tuberculatus*.

The present specimen was found just after dark, motionless, near a bush in otherwise open country, close to the river.

Genus *Cyrtodactylus* Gray

Cyrtodactylus fedtschenkoi (Strauch).

(Figure 2.)

Gymnodactylus fedtschenkoi STRAUCH, 1887, Mém. Acad. Imp. Sci. St. Pétersbourg, ser. 7, vol. 35, p. 46 (type locality: Turkestan: Samarkand).

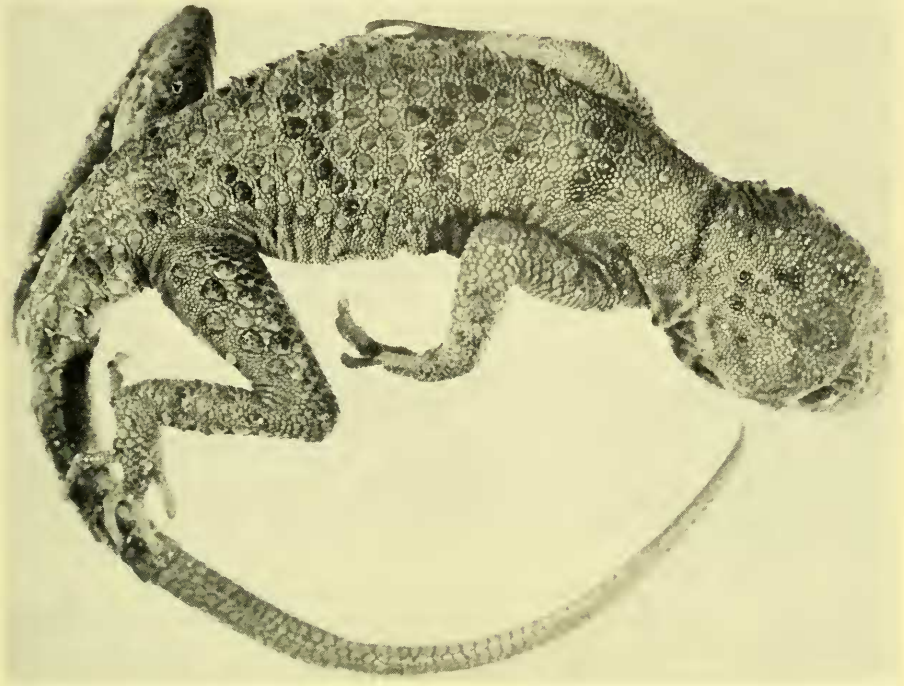


FIGURE 2. *Cyrtodactylus fedtschenkoi* (Strauch) [ZIAS 9877].

Cyrtodactylus fedtschenkoi, UNDERWOOD, 1954, Proc. Zool. Soc., vol. 124, p. 475.

MATERIAL EXAMINED (1). CAS 97995, station 4, 25 August.

REMARKS. This specimen, an immature female (snout-vent length 36 mm.) has been compared with two specimens (CAS 94053 and 94054) from Suzchan-Darja River, Uzbekistan, USSR, and with three specimens (FMNH 161076, 161255, and 161256) from 30 miles west of Dilaram and from Kandahar, Afghanistan. None of these appear to differ from one another significantly. In addition, three specimens (ZIAS 9877) from Pegu-Rabat, Khorasan, Iran, identified as *Gymnodactylus longipes* by Nikolsky, were examined, and are here regarded as conspecific with *C. fedtschenkoi*. The characters used to separate *C. longipes* from *C. fedtschenkoi*, viz., diameter of eye larger relative to snout length, limbs slightly longer, appear subject to individual variation in the material examined. At our request, Dr. I. Darevsky, Zoological Institute of Leningrad, compared the syntypes of *C. longipes* with specimens of *C. fedtschenkoi* and concurs with our view that the two nominal forms are synonymous (personal communication).

In our Afghan specimen a series of indentations in the femoral and preanal

scales is barely discernible, and indicates the position of the pores, about 30 in number, interrupted by a single scale in the midline of the preanal region.

The ground color of the dorsum is light gray. There are five distinct dark bars with irregular margins on the body, the first on the neck, fifth across sacrum. In the interspaces are narrower, less distinct, and somewhat lighter dark bars. The head is mottled with dark brown. The limbs, including the digits, are barred above with alternate dark and light marks, the dark bars broadest. The tail, which is incomplete, is barred with dark above.

This gecko was found at 1700 hours, between layers of a rather flaky rock. The elevation was about 3500 feet.

Cyrtodactylus scaber (Heyden).

Stenodactylus scaber HEYDEN, 1827, in Rüppell, Atlas Reise nördlichen Afrika, p. 15, pl. 4, fig. 2 (type locality: Arabia).

Cyrtodactylus scaber, UNDERWOOD, 1954, Proc. Zool. Soc., vol. 124, p. 475.

MATERIAL EXAMINED (5). CAS 96174-96178, station 19a, 22 July. CAS 97976, station 1, 29 August.

ADDITIONAL MATERIAL. RJC 36-37, 41-42, 44-48, 50, 52-54, station 19a, 22 July.

REMARKS. CAS 96174 contains one 5 mm. egg in each oviduct. The smallest juvenile measures 22 mm. from snout to vent. Stomach contents include flies, ants, and beetles. There are no obvious differences between Afghanistan specimens and those from either Iran or Arabia.

All but one of these geckos were collected at night, between 2000 and 2300 hours. They were abundant on the plastered walls of the Guest House at Khost and on the garden walls surrounding it. They were most frequent on the side of the wall toward the west, which may have retained more warmth from the sun. All were fairly inactive, and where there were few holes or crannies, were fairly easily caught. On the garden walls, a greater number of hiding places rendered them more difficult to obtain. On no occasion were the lizards found on the ground. Air temperature at 2315 hours was 27.5° C. A single specimen was taken at 0700 hours at the base of a wall inside a hotel in Herat.

Genus *Eublepharis* Gray

Eublepharis macularius (Blyth).

Cyrtodactylus macularius BLYTH, 1854, Proc. Asiatic Soc. Bengal, vol. 23, p. 737.

Eublepharis macularius, ANDERSON, 1871, Proc. Zool. Soc., 1871, p. 163.

MATERIAL EXAMINED (2). CAS 96212, station 16b, 29 July. CAS 96245, station 22, 8 August.

REMARKS. These two specimens, an adult female (snout-vent length 112 mm., tail 83 mm.) and a small juvenile (snout-vent length 59 mm.) closely resemble specimens from Kolpur, Quetta District, West Pakistan (CAS 101440-

101441, and five live specimens). The juvenile is white, with three very dark solid crossbars on the body, one in the neck, and dark on the head. The two slightly larger juveniles from Kolpur have a few scattered dark spots in the interspaces between the bars. In the adult, as in two adults from Kolpur, the crossbars have faded to a light gray, and are scarcely discernible. The dorsum has many small dark spots scattered more or less uniformly over head and body (somewhat more pronounced in areas of crossbars), these spots largely confined to dorsal tubercles. These specimens differ from two live specimens from Tatta, West Pakistan—which as juveniles had much broader dark crossbars and very narrow interspaces, and now, as subadults, have much larger and confluent dark markings than the northern animals of comparable age and size; the crossbars are still very evident, and a distinct narrow vertebral light line is present. The Afghan and Kolpur geckos also have a more slender habitus and proportionately larger ear opening. We have not seen sufficient material to state whether or not distinct populations of these geckos can be distinguished. In view of the fact that a new species, *Eublepharis angramainyu*, has been described recently from Iran and Iraq (Anderson and Leviton, 1966), available material and the distribution of these geckos should be further examined.

The adult (CAS 96212) was found shortly after dark, crossing a fairly open piece of earthy ground close to the road. It was active, but not agile, and judging from its apparent disorientation when approached, was probably surprised some distance from its hiding place. When first captured it was a uniform pink-gray color, but changed to a pale yellow with purple and yellow tubercles and pale purple bars across the dorsum, the head very pale gray with purplish patches, the underparts grayish white. The juvenile was found dead in a hole into which a specimen of *Eremias velox persica* had run.

The female has a very large egg (11 mm. in diameter) and a graded series of smaller but well developed eggs in each ovary. An account of the habits of these geckos has been given by Minton (1966).

Family LACERTIDAE

Genus *Acanthodactylus* Wiegmann

Acanthodactylus cantoris subspecies.

Acanthodactylus cantoris GÜNTHER, 1864, Rept. British India, p. 73 (type locality: India: Ramnagar).

MATERIAL EXAMINED (11). CAS 96200–96201, 96206–96209, station 16a, 29 July. CAS 97970–97971, station 5, 25 August. CAS 97977, 97993–97994, station 6aii, 25 August.

ADDITIONAL MATERIAL. RJC 91–92, 99–110, 116–118, station 16a, 27 August. RJC 249, 252, station 6aii, 25 August.

REMARKS. Preliminary examination of meristic data indicates that speci-

mens from southern Afghanistan and northern Baluchistan, West Pakistan belong to a population distinct from both the typical subspecies and *Acanthodactylus cantoris blanfordi*.

The two largest females (snout-vent length 70 and 76 mm., tail 150 and 149 mm.) have eggs in the ovaries, the largest 3 mm. in length. The largest male measures 76 mm. from snout to vent, tail 162 mm. No recently hatched specimens were observed, the smallest lizard, a juvenile female, having a snout-vent length of 40 mm. Recognizable stomach contents consist of ants.

These lizards were taken at elevations (3500-3800 feet) considerably higher than usually recorded for the genus. Those found near Kandahar came from two localities, on a dry, sandy river bed and its environs southeast of Kandahar, and a small dune area west of Kandahar. They were active in the morning, first appearing about 0745 hours and becoming numerous by 0900 hours. At mid-day they were less abundant, reappearing by evening. They were much more wary than those taken near Nimla, moving and hiding so quickly that it was often difficult to follow the movement. They had a tendency to retreat only an inch or two down a hole, lying quite motionless to escape detection, and then would dart out suddenly, only to disappear again a few yards away.

The specimens from near Nimla were obtained from dry sandy islets with low thorny bushes, in a river that was still flowing. The lizards were active during the early morning and again in the late afternoon, running across the sand from bush to bush. They had disappeared by 1300 hours. The variation in size of individuals seen was less than in the Kandahar region. *Eremias regeli* and *E. guttulata watsonana* were found in the same area, but occupied the more stony parts and did not occur with the *Acanthodactylus*.

Genus *Eremias* Fitzinger

Eremias aria Anderson and Leviton.

Eremias aria ANDERSON AND LEVITON, 1967, Occ. Papers Calif. Acad. Sci., no. 64, 4 pp., 1 fig.

MATERIAL EXAMINED (2). CAS 96204-96205, station 16c, 31 July.

REMARKS. These specimens, the holotype and paratype of this recently described form, were seen running over rocks close to the stream in a steep river valley, and hiding at the base of shrubby undergrowth.

Eremias guttulata watsonana Stoliczka.

(Figure 3.)

Eremias (Mesalina) watsonana STOLICZKA, 1872, Proc. Asiatic Soc. Bengal, p. 86 (type locality: West Pakistan: Sind, between Karachi and Sukkur).

Eremias guttulata watsonana, SMITH, 1935, Fauna British India, vol. 2, p. 389.

MATERIAL EXAMINED (29). CAS 97987, station 6ai, 25 August. CAS 97982-97983, station 7, 25 August. CAS 97985, station 9, 23 August. CAS 96189-

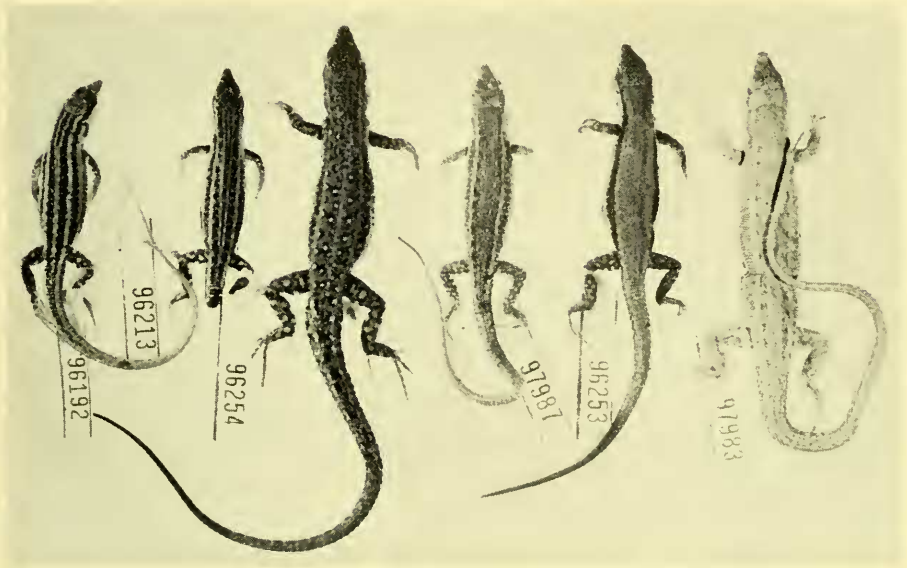


FIGURE 3. Variation in dorsal color pattern of *Eremias guttulata watsonana*.

96194, 96240, station 15, 28 July. CAS 96213, station 16a, 29 July. CAS 96173, 96253, station 20, 22 July. CAS 96254, station 21a, 19 July. CAS 96218–96231, station 22, 8–9 August.

ADDITIONAL MATERIAL. RJC 29, station 21a, 19 July. RJC 66, 70–71, station 15, 27–28 July. RJC 141–144, station 22, 8 July. RJC 150, station 22, 8 August.

REMARKS. Two specimens, CAS 96173 and 96253, are strikingly different in color pattern from the other Afghanistan specimens. The dorsum is a uniform gray, sprinkled with indistinct small light spots; a broad black dorsolateral stripe runs from the eye onto the tail, and contains two rows of small light spots; below this runs a white stripe of nearly equal width, followed by a narrower ventrolateral gray stripe between the limbs. Both specimens were taken in small sunny glades in conifer forest at an elevation of about 8000 feet. They were leisurely in their movements, disappearing and reappearing in debris. One was seen feeding on small insects. They do not appear to differ from other Afghan specimens in other than color pattern. Color pattern in the remaining specimens is variable, the basic pattern being four dark stripes on the dorsum (five on neck), broader than the light interspaces, and each containing two rows of light spots. In most specimens these dark stripes break up into rows of dark-margined light ocelli.

Counts for all specimens fall within the range given by Smith (1935), Anderson (1963), and Minton (1966) for the subspecies. This is probably the

most common lizard in southwest Asia, and a considerable quantity of material is now available in museums. Detailed examination of this material will doubtless reveal geographically correlated variation in this subspecies which ranges from Rajputana to Syria, but this arduous task is beyond the scope of this paper.

The presence of an occipital shield and its contact with the interparietal is constant for 95 specimens examined from Iran and Afghanistan. The large transparent scales of the lower eyelid are edged with black, and in no instance are there more than 10 longitudinal series of ventral plates. These characters serve to differentiate this form from the related species *Eremias brevirostris*.

In specimens from Afghanistan, large eggs are present in specimens collected in late February, early March, and mid-April. None of the present series collected in mid-July through August are in breeding condition, testes and ovaries being very small in size, even in the largest specimens. Of the several juveniles in the present series, the smallest, collected 8 August, has a snout-vent length of 28 mm. This is in accord with Minton's (1966) data for West Pakistan indicating early spring breeding, the first young appearing about May and reaching maturity by winter.

Apart from those collected in the forest, these lacertids were found in bare, open country, usually hard-baked fine earth, often in part the result of previous nomadic cultivation, but sometimes stony or pebbly. They were never observed in sandy habitats. Nor did the microhabitats of *E. velox persica* and *E. guttulata watsonana* precisely overlap, although only a few yards often separated the two. At Charikar, *E. g. watsonana* was found among the pebbles of a dry watercourse, while *E. velox persica* was found in sandy or earthy patches nearby. When pursued, the former was able to take refuge under stones, owing to its small size, whereas the latter would dive into holes. When found on a baked earth habitat, *E. g. watsonana* ran from bush to bush, pushing its way into the denser prickles around the base, ignoring the holes in the vicinity.

Usually activity began around 0800 hours (two or three hours after sunrise) although on occasion the lizards were seen shortly after dawn. At station 7 on 25 August, the air temperature was 20.5° C., the ground 23.0° C. at 0730 hours before the lizards had appeared. By 0800 these animals were becoming active, and at 0830 hours the air temperature was 27.0° C., the ground 33.0° C.

Eremias regeli Bedriaga.

(Figure 4.)

Eremias regeli BEDRIAGA, 1905, Ann. Mus. Zool. Acad. St. Pétersbourg, 1905, p. 236 (type locality: Schirabad).

MATERIAL EXAMINED (4). CAS 96198, 96202-96203, station 16a, 29 and 31 July. CAS 96211, station 16b, 30 July.

REMARKS. Allowing that our identification of a member of this complex group is correct, this species is recorded for the first time from Afghanistan,

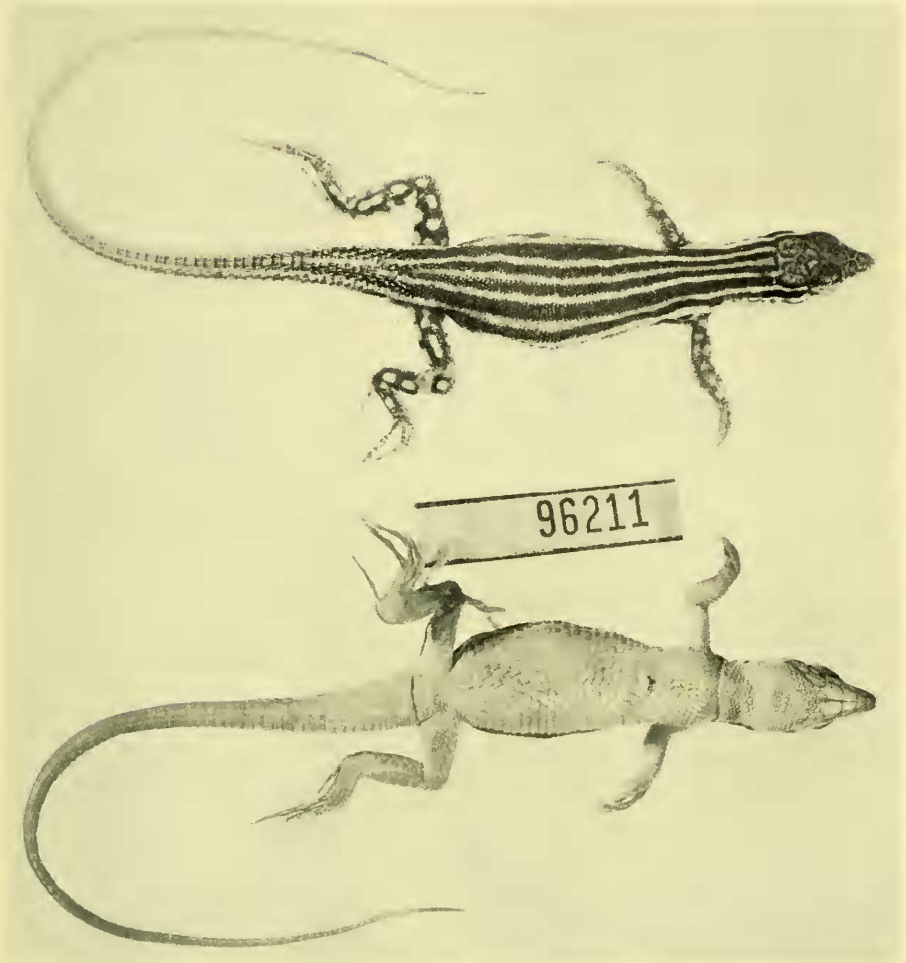


FIGURE 4. *Eremias regeli* Bedriaga.

though Terentjev and Chernov (1949) suggested it should be expected at least in Afghanistan to the north of the Hindu Kush. While this still remains a likelihood, our specimens, unexpectedly we might say, were taken in the upper Kabul River Valley on the southern slope of the Hindu Kush.

One specimen was collected in the direct sunlight at 1300 hours, the air temperature 44° C., sand 58° C. No others were seen at this time, although a number had been seen about two hours after sunrise. The habitat was flat terrain, sandy in places, with a few bushes. The other specimens were found on stony islets in the river bed of station 16a, in close association with *Eremias*

guttulata watsonana, but not with *Acanthodactylus cantoris*. They were fairly common, but difficult to catch as they ran from bush to bush, becoming less numerous around mid-day.

The fact that this region, east-northeast of Nimla on the old Kabul-Jalalabad road, harbors two previously unrecorded species of *Eremias*, *E. regli* and the recently described *E. aria* (see *E. aria* above), both of which have their closest affinities with populations to the north of the Hindu Kush, is of considerable zoogeographic significance and warrants further investigation.

Eremias velox persica Blanford.

(Figure 5.)

Eremias persica BLANFORD, 1874, Ann. Mag. Nat. Hist., ser. 4, vol. 14, p. 31 (type locality: Iran: near Ispahan).

Eremias velox var. *persica*, BOULENGER, 1921, Mon. Lacert., vol. 2, pp. 312-314.

MATERIAL EXAMINED (10). CAS 97988, station 6a(ii), 26 August. CAS 97984, station 8, 23 August. CAS 96275-96276, station 9, 13 July. CAS 97986, station 9, 23 August. CAS 97981, station 10, 23 August. CAS 96255-96256, station 18, 23 July. CAS 96232-96233, station 22, 9 August.

ADDITIONAL MATERIAL. RJC 26, station 9, 13 July. RJC 161, 194-195, station 22, 9 August.

REMARKS. Counts and measurements for our specimens fall within the

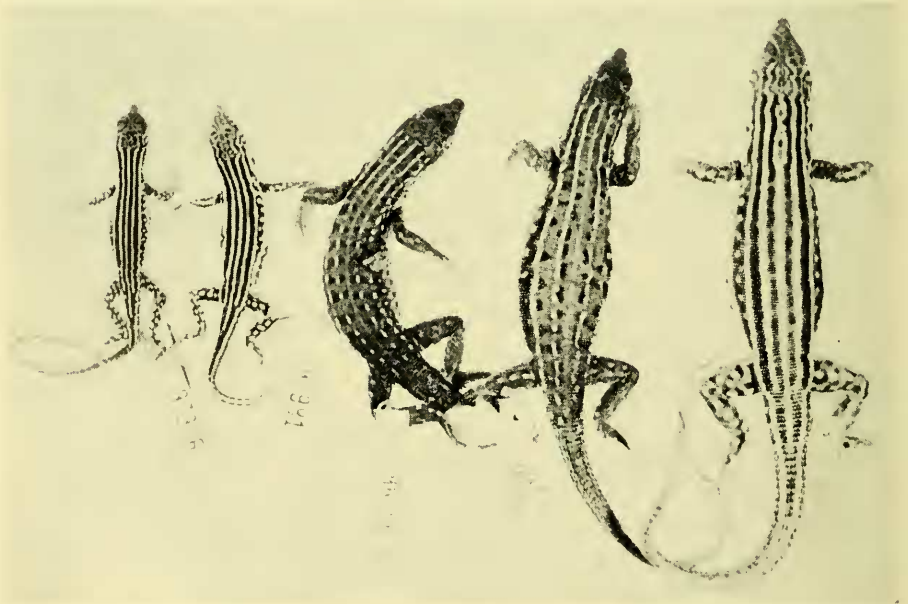


FIGURE 5. Ontogenetic changes in dorsal color pattern of *Eremias velox persica*.

known range of this subspecies. The largest male, CAS 97984, is a juvenile measuring only 41 mm. from snout to vent. The largest female, CAS 96232, has a snout-vent length of 98 mm. The smallest juvenile measures 35 mm. from snout to vent. The ontogenetic changes which occur in the color pattern of this species are beautifully demonstrated in our series (fig. 5).

The females contain eggs up to 2 mm. in diameter in the ovaries, one, CAS 96255, having eggs in the oviducts, the largest 9 mm. long.

These lizards occupied a wide range of habitats but preferred the more sandy areas on bare open country, with sparse prickly brush cover. Those from Meiden Khula inhabited a dry river bed with fine gravel and woody shrubs, an area probably inundated by water in the rainy season. This valley cut through the conifer forests, and this area was near the edge of the forest at 6700 feet elevation. The lizards were actively foraging in the open sun between 1500 and 1600 hours, and others were seen. They were difficult to catch, as they were quick-moving, darting from one place to the next and taking refuge in the thick undergrowth. In more open country they generally escaped into (rodent?) holes with numerous exits, often around bases of prickly bushes or in the banks of dry fields or ditches.

Juveniles and adults were seen together between Ghazni and Mukur. None were seen at 0715 hours when the air temperature was 20.0° C., but they were abundant between 0945 and 1100 hours, and the air temperature rose from 28° C. to 35° C. At 1100 hours they were still spending short spells in the sun, then retreating under bushes. The sand temperature was then 42.0° C. In other localities 0730 hours was the earliest any were collected, the air temperature 24° C., sand 25° C.

Genus *Mabuya* Fitzinger

Mabuya dissimilis (Hallowell).

Euprepis dissimilis HALLOWELL, 1857, Trans. Amer. Phil. Soc., ser. 2, vol. 11, p. 78 (type locality: Bengal).

Mabuia dissimilis, BOULENGER, 1887, Cat. Liz. British Mus., vol. 3, p. 175.

MATERIAL EXAMINED (1). CAS 96195, station 16b, 31 July.

REMARKS. This is the first record of this Indian species for Afghanistan, and its presence in this area east-northeast of Nimla in the valley of the Kabul River (which ultimately joins the Upper Indus) heightens the zoogeographic importance of this part of Afghanistan.

This specimen, a male, measures 56 mm. from snout to vent; the tail measures 93 mm. There are 36 rows of scales round the middle of the body, and 16 subdigital lamellae beneath the fourth toe. The dorsal scales have three keels. The three light lines on the dorsum are not pronounced, and are margined with black dots. The light spots on the flanks lack black margins.

This skink was found at 1100 hours among damp stones close to the water with some grass and other low vegetation nearby. It moved with considerable speed when disturbed and was eventually caught by retrieving it from under a stone. Although the air temperature was quite high, the stones were cool and moist.

Genus *Ophiomorus* Duméril and Bibron

Ophiomorus tridactylus (Blyth).

Sphenocephalus tridactylus BLYTH, 1855, Jour. Asiatic Soc. Bengal, vol. 22, p. 654 (type locality: Afghanistan).

Ophiomorus tridactylus, BOULENGER, 1887 (in part), Cat. Liz. British Mus., vol. 3, pp. 394-395.

MATERIAL EXAMINED (1). CAS 97973, station 5, 27 August.

REMARKS. This specimen was among the material discussed in a recent review of the genus (Anderson and Leviton, 1966). It was collected at about 1000 hours, when the air temperature was 36° C., the sand surface 52° C. Prior to 27 August, the Clarks observed that numerous snake-like tracks had been made in the sand, but no amount of digging had yielded anything. On this one occasion the track was seen to stop, and an area of undisturbed sand indicated that a reptile might have buried itself. Upon being disturbed, the skink moved just under the surface, making a track identical to those already observed. Examination of tracks in the area revealed that the lizards usually moved by "swimming" in snake-like fashion through the fine sand, obviously without using their diminutive limbs. Occasionally this kind of track would give way to a more lizard-like one, with light footmarks and a tail trail. Presumably this form of locomotion is used when the skink moves in a more leisurely manner over the sand surface.

Family VARANIDAE

Genus *Varanus* Merrem

Varanus bengalensis bengalensis (Daudin).

Tupinambis bengalensis DAUDIN, 1802, Hist. Nat. Rept., vol. 3, p. 67 (type locality: Bengal).

Varanus bengalensis, DUMÉRIL AND BIBRON, 1836, Erp. Gen., vol. 3, p. 480.

MATERIAL EXAMINED (2). CAS 104378, station 13, 11-12 August. CAS 96199, station 16(b), 29 July.

ADDITIONAL MATERIAL. RJC 122, station 13, 17 July. RJC 123-127, station 13, 1 August. RJC 190-193, station 13, 11-12 August. RJC 120-121, station 15, 27 and 28 July. RJC 90, station 16b.

REMARKS. Apparently this is the first documented record of the Indian monitor in Afghanistan. Murray (1884) included Afghanistan in the range of this species and Minton (1966) includes extreme southeastern Uzbekistan.

CAS 96199 is a handsomely marked juvenile, 110 mm. from snout to vent,

the tail measuring 190 mm. The larger specimen, a female, has a snout-vent length of 430 mm.

This monitor was seen usually in damp localities, principally terraced rice fields and steep earth banks in the river valley from Kabul to Jalalabad, although two individuals were seen on dry stony hills, and two more (Jalalabad to Nimla) in semi-desert but close to a small river. One specimen was seen near the town of Khost, by cultivated fields, and ran up a small tree when chased.

Activity began early in the morning, at which time (0630-0800 hours) they were observed lying close to, or half out of their holes in crumbly banks, into which they would retreat rapidly if approached in anything but an extremely cautious manner. Later in the morning (1000-1200 hours) individuals were encountered in the open, sometimes at least 100 yards from their burrows, presumably foraging in the rice fields. When disturbed, they ran at great speed toward their burrows, often swimming for many yards in ditches to reach safety. In one locality, individuals were observed about an hour before sunset, close to the water in a more open river bed, again over 100 yards from any cover. During the hottest periods the Indian monitor probably takes to its hole, often a complex series of tunnels running for many yards, but a few individuals would lie in cool damp ditches, screened by the rice or rushes. Two animals took to the river when approached and dived unhesitatingly into the water. Although the area was watched for several minutes, they were not seen to reappear.

A remarkable aspect of their behavior was their unerring knowledge as to the location of their burrows even when disturbed at considerable distances from them. Even with two people to corner them they would evade one's grasp with amazing agility. Never did a specimen attempt to defend itself in the open, although when caught they would hiss angrily and lash their tails. Only rarely did they try to bite.

Of 36 specimens of *V. bengalensis* seen, two were juveniles. One of these was caught by the roadside about a mile from any water (Jalalabad-Nimla) and the other by village boys from up a tree, perhaps half a mile from the river. In spite of several visits to station 13, where adults were abundant, on only one occasion was a suspected juvenile seen, but it ran off the rock into a pool in the river before it could be caught or its identity confirmed.

Although these lizards were never seen feeding, it is probable that they take principally the frogs that are abundant in the area. No other reptiles were seen, except *Calotes versicolor* and a very few lacertids. One cast skin, probably of *Ptyas mucosus*, was seen, but doubtless there are plenty of small rodents which might contribute to the diet. Minton (1966) showed that a diversified diet is taken in West Pakistan, where he found musk shrews, palm squirrels, snakes, lizards, tenebrionid beetles, crabs, crayfish, locusts, and solpugids in stomach contents. In captivity they ate raw meat freely. On two occasions a live

specimen of *Natrix natrix persa*, between 0.75 and one meter, was introduced into the cage, and within a few minutes the lizard caught the snake in its jaws close behind the head. Sometimes it held the snake's body with one of its limbs and by sharp jerks of its head and twisting it while at the same time partly crushing it in the jaws, the monitor gradually killed the snake. The snake struggled a little, but slowly the monitor grasped it more and more firmly in its mouth, taking the head in backwards. The animal then dropped the dead snake and later swallowed it at its leisure. Each time the snake was introduced around sunset, and although the air temperature was not high, the lizard showed vigorous and purposeful movements. Several frogs introduced at the same time were eaten later.

CAS 104378 lived for two years at the California Academy of Sciences. During most of that time it fed readily on chicken necks; it refused live food.

Family COLUBRIDAE

Genus *Coluber* Linnaeus

Coluber species.

MATERIAL EXAMINED (2). CAS 103785, station 1, 31 August. CAS 96250, station 16b, 31 July.

REMARKS. CAS 103785 is a male having a snout-vent length of 402 mm., tail 137 mm. The fifth supralabial enters the eye, the sixth being separated from the eye by the presence of a small subpostocular. There are 205 ventrals and 100 subcaudals. The ground color is light tan, and 46 dark crossbars adorn the body. Thus, this individual is referable to *Coluber karelini* Brandt according to the criteria of Terentjev and Chernov (1949). It was taken about 20 miles from the Iranian border. It made little attempt at escape, wriggling into a low bush and winding itself among the branches at the base. It was sluggish at this time of the morning (0800 hours) as were individuals of *Agama agilis* found nearby.

The other specimen fits Terentjev's and Chernov's (1949) concept of *C. rhodorhachis* (Jan). A female, it measures 692 mm. from snout to vent (the tail badly damaged). The fifth and sixth supralabials border the eye, and there are 223 ventrals. The body is uniform gray. The animal was found dead on the edge of a field not far from the river. Ants were feeding on it; the specimen is in poor condition.

The reader is referred to the comments of Leviton (1959) regarding the problems surrounding the nominal taxa *C. rhodorhachis*, *C. karelini*, and *C. ventromaculatus*. As he has pointed out, the characters used to distinguish these forms are variable, and the group must be studied throughout its geographic range before specimens can be assigned with certainty to one of these taxa.

SUMMARY

The collection assembled by the senior authors in Afghanistan in the summer of 1964 includes 26 species of amphibians and reptiles. Of these 26 species, *Eremias aria* was described recently by the junior authors from this material, and *Phrynocephalus clarkorum*, a species previously confused with *P. ornatus*, was recognized and described by Anderson and Leviton (1967b). In addition, *Bufo andersoni*, *Rana cyanophlyctis*, and *Mabuya dissimilis* are recorded from Afghanistan for the first time, while the presence in Afghanistan of *Varanus bengalensis* is finally documented.

The specimens collected in eastern Afghanistan in the valley of the Kabul River and its tributary streams (stations 13–16) are of particular zoogeographic interest. In this region a number of predominantly Indian species penetrate Afghanistan. These include *Rana cyanophlyctis*, *Varanus bengalensis*, *Calotes versicolor*, and *Mabuya dissimilis*. In addition, *Eublepharis macularius*, known from the Salt Range of the Punjab and from West Pakistan, enters here. *Acanthodactylus cantor* is also present in this area, at an unusual elevation for this species. Whether this population is most closely related to those of the Helmand basin or to those of Rajasthan remains to be determined. Particularly interesting too is the discovery in this region of two previously unrecorded species of *Eremias* (*E. aria* and *E. regeli*) both of which appear to have their greatest affinities with species found to the north of the Hindu Kush in the USSR. *Agama nupta*, apparently a species of the southern margins of the Iranian Plateau, is also present. *Bufo andersoni*, another species of West Pakistan and northern India, was taken west of Khost in the drainage of the Kurram River, a tributary of the Indus. *Rana cyanophlyctis* was found in this locality also.

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